QWEST FOUNDATION FOR EDUCATION
COMPETITIVE SUB-GRANT PROPOSAL ASSURANCE SHEET

Project Title: Music Technology into the 21st century Amount of Request: $ 7357.00

Name of Certificated Teacher (or "lead teacher" if more than one): Mark Murdock

Name of School currently teaching at: Troy Elementary School & Troy Jr/Sr High

District Name: Troy School District #287 District Number: 287

Total number of teachers involved (if more than one): _____

Approximate number of students impacted: 320/year Grade level(s) impacted: K-12

Content area(s) impacted: Music- production, performance, knowledge, creation

I certify that if I receive a Qwest Foundation for Education Grant –

- **I agree to create a 5-minute video highlighting my project for the purposes of sharing best practices with other Idaho K-12 teachers.**
- **I agree to do one presentation on my project to other Idaho K-12 teachers before October 31, 2012.**
- **I agree to submit an electronic report to the Idaho State Department of Education before October 31, 2012.**

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Submit one digital copy of your proposal (PDF format) by Thursday, November 10, 2011 (by 5 pm MST) via e-mail to:
Jimmy Takata
jtakata@sde.idaho.gov
208.332.6937

Proposals submitted after that date and time will not be considered.

***Only one PDF file per teacher applicant will be accepted (this includes the Assurance Sheet).**
Faxes will not be accepted.

ABSTRACT

The technological and software items requested in this grant will continue and expand the musical educational experience of all the students in the Troy Public Schools (Troy Elementary and Troy Jr./Sr. High). It will replace seriously outdated computers and make improvements to other related items that have been cobbled together over the last 10 years. The technology will help and encourage students to get better at singing or playing instruments as well as prepare them for the future in terms of college music programs or making music themselves using the unparalleled possibilities of modern technology.

The technology has finally reached the point where it can be integrated into music education, seamlessly and reliably, so that the creative and educational process flows naturally to satisfying conclusions. This is the real innovation in this plan: technology will seem like such a natural part of the process that the line between traditional music education and music technology education will be very blurry. I won't have to spend hours teaching them how use the technology. It is very intuitive now. They can go from learning in the lecture type setting to the music creation process very easily and quickly. When I speak of music creation I'm referring to these kinds of music:

- the production of music recordings,
- written music (traditional composition),
- music education (music theory, ear training, history, current world musical culture),
- evaluation of musical performance (self-assessment and teacher assessment).

The technology will enhance the student learning by increasing the modalities involved in learning. In other words, when I present a concept, the computers can present it in a slightly different, more hands on way and thereby increase student involvement and interaction and therefore learning.

The computers allow easy recording opportunities which create better ways for students to evaluate their own performances and understanding in a very natural way. Self-evaluation and evaluation of others is high on the national standards for music. Not to mention that the computer, itself, can to a certain extent evaluate the performance and give visual feedback of the performances.

The computers also allow opportunity to explore music history and world instruments that are not available in any other way. In this century, the computer itself is a fantastic compositional tool in which students can hear their compositions performed on instruments that sound very close to the real instruments.

CURRENT INNOVATION

Over the last 10 years, I have taken the Apple computers that were being phased out of laborary use and put them to use in the music room. The music room was well designed specifically as a music room and has three practice rooms that also function as music production suites. We have a digital drum set and a couple of midi keyboards connected to the computers as well as microphones and mixers that I have put together from other sources and things that the school was no longer going to use. The computers are on about eight years old at this point and the equipment is mismatched and inconsistent from room to room. Some computers are not as capable as others and so work done on one computer may not be transferrable to another, which limits flexible use.

Students use the computers to record themselves, for testing purposes, and also for music creation. Music creation is through Finale and Garage Band. Evaluation of tests is done with Garage Band. Garage Band is digital audio workstation software that is included with all Apple computers.

The Apple computers are easy for me to set up, network together, and use so that I do not draw on the resources of the school's already stretched Technical Support person. For instance, I could play a student' recording that was done in a practice room, on the computer in the front of the classroom but the computer in front of the classroom is the oldest and so sometimes it is not capable of playing what the students have done on the more capable computers. I have a very old iMac G3 which is used as a server so that students can have access to their work from any computer in the classroom. Because I understand Apple computers, and have worked with them in and out of the classroom, in my own music creation and in all aspects of teaching, I can do this without bothering the IT person. I can do this because Apple has made this sort of thing very easy to do.

Students have created videos that go with music. They have created music that we have used in performance. They have taken tests on the computers, both knowledge and performance tests. The students can also (with close supervision) use the internet and the tremendous educational resources available there, many of which are free. Students collaborate to make projects together. Students have taken the dry written or oral report about a composer to new levels including sound and video presentations about composers, even including humor and pathos. All these accomplishments are in spite of computers that are very slow and sometimes crash because of their age.

Students take tests that I put on the computers (performance tests, knowledge quizzes etc). Because of the computers, I can assess their progress and more importantly they can assess themselves.

Much of the educational software no longer runs on the computers, so programs like Music Ace and Auralia are not currently being used. This is because I had to upgrade to newer operating systems (OS 10.5) to run the music composition and creation software. The newer operating systems won't play the older software.

With the makeshift hand me down computers, each practice room has a old eMac, an audio system that is suitable for when music is the focus and various electronic and acoustic instruments. All students take time to learn about music and create music at their own pace and according to their own instruments in these rooms. They are pulled from the regular music class to have the time to do this.

I had to buy my own computer so I could display YouTube videos which can be very instructive. The old computer I have (which substitutes get to use) will not play these videos because it cannot keep up. It is too slow. Yet when I want to show students what a lute is or what the Rio Grande looks like, this is the way to do it.

PROJECT NARRATIVE

This project will touch on music education in three areas. These areas are the same ones that music education has addressed for centuries, but now they will be done quicker, more individually, with opportunities for self-assessment and collaboration than ever before. The current generation of computer and peripheral technology has become some intuitive, so stable and so fast that I will not need to spend much instructional time to teach how to use the software and hardware. The focus can be on the music: performance, creation, collaboration and evaluation.

This technology upgrade will touch every student in the Troy School District over the next four years. This is because music classes are required for all elementary students and many students still do music in junior high and it is optional in high school. In my general music classes, all students use the computers which are located in the back of the classroom. There are three practice rooms, each equipped with the old Apple eMacs that I have mentioned. Newer computers means less crashing, ability to do things faster, with better sound and so forth.

In terms of music education, students will have the current educational software to work with. Music Ace for elementary students reinforces musical concepts of notes, pitch and rhythm. Because students are attracted to it's engaging interface, they are motivated to learn about those elements of basic music notation. Because they can learn at their own individual pace, they learn better and can use this knowledge better in the general classroom.

As the students mature, they work with Garage Band (digital audio music creation software). Here they can actually put together samples of music (composing) to create their own compositions. These compositions can be as simple or as complex as the student can imagine. Garage Band lets students with beginning musical instrument playing skills, or singing skills, create more complex music, which they find more satisfying. As the students mature, they can begin to create their own music and record it with Garage Band. Then they can add drum tracks, bass tracks and so forth to make even a simple recording of "Frere Jacque" sound like a modern pop song. Or they can alter it so that it sounds like something from outer space or under the sea.

When they have reached this level, I can use Garage Band as a testing device where I have them record sections of music that they are supposed to be learning for band or choir. Because the technology is easy to use it becomes transparent and they can focus on what they are supposed to be doing or learning. In the old days, we would have students record their part on a cassette deck. Usually it was a cheap deck and sounded bad, no matter how good the student was. Now we can get representative recordings easily. Also, it allows for students to play along with something, which may help them play better. With my choir students, I can record the piano part, and then record them singing along with the piano. The piano lends support to the beginning student and gives them the courage and opportunity to do their best. As they mature, they can learn to do it on their own.

When the students have created something that they think is cool, that motivates them to try to create even cooler stuff and that increases learning. As they try new techniques, do new things with old techniques they create even more interesting and satisfying things which in turn inspires more learning.

I can send small groups of students back with a drum, claves, and a set of bells and have them record themselves playing something. This would be based on something I was teaching them, such as the 12 bar blues. Then they can hear themselves and self assess. They can record each part individually and multi track the other parts. All of this requires teamwork and collaboration. It also yields also peer assessment as they listen to each other and learn from each other.

When they have created cool things, they can share it not only with their classmates, but they can make CDs, MP3s and so on that they can share with their friends and family. Again the older computers crash and are slow to do these things. Newer computers are almost instantaneous in these aspects and rarely crash.

Music composition tools such as Sibelius and Finale, two professional and nearly professional music notation software tools, students can compose and write down their music, which they can share. Just as in reading, sometimes by writing, their reading improves, this works in music too. They begin to understand more clearly what those notes mean and how writing them differently produces different sounds. Modern notation software allows people to hear what their music will sound like on different instruments and with different combinations of instruments with just a few mouse clicks. This is impossible with out the modern technology. When I was in college, I would write a string quartet and the best I could get was go plunk it out on the piano. Now they can hear whole bands, symphonies, or just a sax solo with representative sound.

The older students, those in high school band and choir, they will use ear-training software and have individual theory lessons on the computers. Ear training is essential for students who are going to take music study seriously. This trains them to hear music and know what they are listening to down to the note. They learn interval recognition, chord recognition and rhythmic dictation. These are things that I currently cannot teach very well. I can teach the concepts to groups of students, but for each individual student to get personalized instruction and evaluation requires computers. Again, the newer computers will allow for more stability and better sounding instruction. They programs also “learn” what the students’ most common mistakes are (individually) and tailors the new practice to that. Think of it as a flash card deck that recognizes with mistakes the user most frequently makes and then makes those cards go to the top so the student gets the most practice where he or she is the weakest. This ear training and rhythmic dictation training is from the Auralia and Musica Practica software.

Our school has a fairly decent internet connection and with the LCD projector I can expose students to the incredible wealth that the internet has to offer in terms or more instruction, more music, more musicians and even musicians with whom they may want to collaborate.

The school district’s technology committee has agreed to support the additional computers in the music classroom even though the rest of the district’s computers are Windows machines. The music department itself, through it’s fund raising efforts will commit to cycling the computers through on a regular basis, so we are not faced with needing to buy four computers all at once. The music department sells concessions at five basketball games per year to provide additional cash in the program. This is a reasonable fund raiser because the music department also provides the band for the games. The software upgrades can be purchased as regular curriculum purchases.

The anticipated outcomes of this program are that all students will have an increased appreciation for music, classical and modern. They will see that the old music is relevant and that with the new technology, they themselves can continue the tradition of making music, whether with an ancient wind instrument, a guitar, or a computer. Their understanding of music will be deeper because they have self evaluated and had peer evaluation. Also more students will see music as relevant to their lives and will continue in the music program to maturity. Also students with an engineering or computer bent will see the technology in different ways. This will increase creativity and should also increase productivity.

PROJECT SCOPE AND SEQUENCE

Technology provides unparalleled possibilities for student learning. The younger students begin with software that is attractive to them and written for their maturity and intelligence level. As the students mature, the opportunities advance along with them. From recognizing quarter notes and rests to esoteric scales and complex rhythms the computer can keep up and motivate the students. Students taking private piano lessons will suddenly discover whole new universes to use their piano skills.

Older students will not have to take their teacher's word for the grades they get. They will be able to hear for themselves. Slowly such concepts as blend, harmony, intonation will make better and better sense.

They will start with simple music and move to the more complex. As their interests mature and change, the technology will be there to meet them and take them farther.

Students who stay in the music program will have a definite advantage for beginning college. The research is fairly clear that music students tend to perform better in school. This should make them even more prepared and students who want to study music in college should have a definite "leg up".

The computers can take the general instruction that the teacher provides and tailor it to the individual student's need. The computer becomes and extension of the teacher. Then the computer becomes and extension of the student.

Students from other classes will also be able to use the mini-studios. I have had students from the Ag program and from speech classes and Junior Miss Candidates use the gear for their presentations. The new equipment will just make it better and easier to use.

Budget Narrative

Several areas of technological needs can be addressed by this grant. The first is for the computers. I have chosen the Apple Mac computers for several reasons. First of all I am quite familiar with the platform and I can make it work without having to increase the load on our technical support person. They are also widely regarded as being easier to work with in the music setting. The Mac computers already have sound cards built into them so I don't need to buy and configure those. The Macs also come with Garage Band, the simplest, most powerful digital audio workstation software to work with. One of the best features of the Macs is the ease of file sharing over the intra-net. They can share files in the building with other computers and each other without having to use a browser. They can only access the other computers they are allowed to and only authorized computers can use the initiating computer. This creates secure file sharing and minimizes the opportunities for students to get to inappropriate or unauthorized places.

The software I have chosen is very powerful and industry standard. Finale and Sibelius are the two most common music notation software choices for professionals throughout the world. The student versions of this software are so powerful, that they will meet the students' needs for a long time to come. These programs allow students to write (on paper) and hear their compositions.

Pro-Tools, Logic, and Cubase are the industry standards for music production. They are used in the film music industry, the recording industry, the church music industry (not kidding), and music education in colleges and universities throughout the world.

The audio hardware I've specified is for items that I believe provide the most value for the money. They are easy to configure and built to withstand the rigors of the class room in which they will get heavy use. The speakers are the best part of this upgrade because the speakers I'm currently using are cast off home stereo speakers. The new speakers will provide better sound quality and provide many years of service. The LCD projector and screen are used for class demonstrations, and for students to share their work with larger audiences. Currently I'm using a screen that I built myself from quarter inch melamine board.

BUDGET SPREADSHEET

ITEM	QUANTITY	UNIT COST	EXTENSION	purchase place
Mac Mini	4	799	$3,196.00	Apple.com
22" monitors	4	150	$600.00	
networkable connectable 2Tb hard drive	1	225	$225.00	
LCD projector	1	660	$660.00	
projector screen	1	145	$145.00	
MIDI interfaces	2	39.99	$79.98	
MIDI Keyboards	3	129.99	$389.97	E-MU Xboard 25 Professional USB/MIDI Controller
near filed monitors (speakers)	3 pair	235	$705.00	
audio mixer	2	99	$198.00	PV6 (peavey)
SOFTWARE				
Music Ace Maestro	3	89.99	$269.97	academic sprstr
Finale Notepad	4	18.95	$75.80	academic sprstr
Pro-Tools student	1	294.95	$294.95	academic sprstr
Logic Express	1	199	$199.00	apple.com
Cubase Elements	1	99	$99.00	
Auralia		89.95	$89.95	academic sprstr
Musica Practica	1	125	$125.00	Ars Nova web-site
TOTAL COST			$7,352.62	